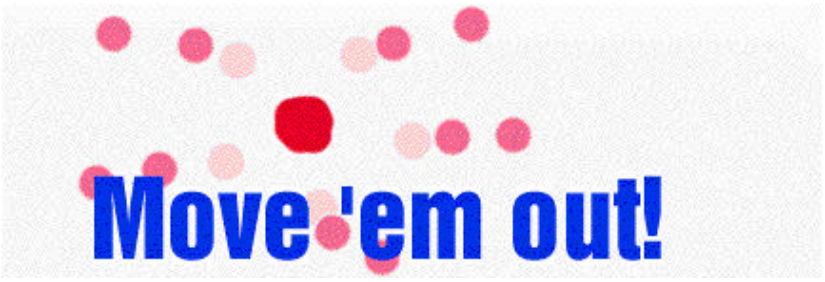
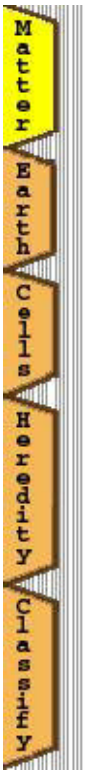




STANDARD 3200-01 Students will evaluate the particulate nature of matter.
OBJECTIVE 3200-0102 Demonstrate the role of motion in the particulate description of matter.

Intended Learning Outcomes:

1a. Make observations and measurements.
1d. Make estimations and predictions based on observations and current knowledge.
2a. Identify variables and describe relationships between them.
2b. Formulate research questions and hypotheses.
2g. Construct models and simulations to describe and explain natural phenomena.
4d. Recognize the personal relevance of science in daily life.

Background:

Be familiar with the particulate nature of matter.

Summary:

1. Students will form hypotheses and observe demonstrations of particle movement.

2. Students will identify variables and describe relationships in simulations of particle movement.

Materials:

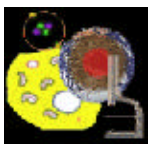
- perfume / ammonia / Pine-Sol / matches

Student Procedures:

- 1. Teacher stands at back of class with students facing forward.
  - Students are asked to not turn their heads and to raise a hand if they sense something different in the room.
- 2. Teacher **quietly** sprays perfume or Pine-Sol, or opens a container of ammonia, or lights a match and burns paper.
  - As the particles move from the area of higher concentration to areas of lesser concentration, the students should be able to sense the substance and raise their hand.
- 3. Before the particles have reached the front of the room, the teacher asks students to look around, observe the room and those hands that are raised.
  - Why have some students observed a difference in the classroom, while others have not?
  - Shortly thereafter all students should be able to smell the selected substance.

Safety concerns:


Be sure to keep all Chemical, and Glassware Safety Rules that are specified by your teacher and in all general laboratory experiences.

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